



***Information Technology and People with Disabilities:
The Current State of Federal Accessibility***

**Presented by
The Attorney General
to
The President of the United States**

April 2000

Executive Summary and Recommendations

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Introduction

Prior to the late 1980's, computers were generally easy for most people with disabilities to use. People who were blind, for example, could use the same word processing software packages as everyone else. Instead of relying on monitors, they used assistive technology — called “screen readers” — to read in a synthesized voice all the text and punctuation that a sighted person would read on the computer monitor. All who used early word processors used keyboard commands to interact with the software. To print a document, for instance, one would simultaneously hit the “control” and “P” keys — something that could be done as easily by blind people as others.

As technology grew more sophisticated, many changes that generally made it easier for nondisabled people to use computers often created barriers for people with disabilities. For instance, software that required someone to issue commands by “pointing and clicking” using a computer mouse became inaccessible to those who could not see icons. Although the solutions were simple and inexpensive, little thought was given to preserving accessibility. For example, if word processing software allows the user to choose between entering “control-P” to print or clicking on a printer icon, then blind people can use the print function as easily as everyone else.

In the past, most agencies did not focus on the extent to which their mainstream technology was accessible to persons with disabilities. Some employees with disabilities lost jobs or became underemployed due to technological advances that unfairly screened them out from the workplace, even when they otherwise had the skills, intelligence, and knowledge to accomplish their jobs.

Section 508 of the Rehabilitation Act

An amendment to section 508, signed by President Clinton in August 1998, requires the Attorney General to report to the President on accessibility of federal electronic and information technology

(EIT) — such as federal Web sites, telecommunications, software, hardware, printers, fax machines, copiers, and information kiosks — to people with disabilities. Section 508 of the Rehabilitation Act, 29 U.S.C. § 794d, as amended.

Section 508 prohibits federal agencies from procuring, developing, maintaining, or using EIT that is inaccessible to people with disabilities, subject to an undue burden defense. “Undue burden” generally means a significant difficulty or expense.

On March 31, 2000, the Architectural and Transportation Barriers Compliance Board (Access Board) published a Notice of Proposed Rulemaking containing draft accessibility standards to implement section 508. 65 Fed. Reg. 17346. Once final, these Standards will be incorporated into the Federal Acquisition Regulation (FAR), to which most agencies are subject. Agencies not covered by the FAR will incorporate the Access Board's Section 508 Standards into their own procurement regulations.

The General Services Administration (GSA) and the Access Board share statutory authority to provide section 508 technical assistance. 29 U.S.C. § 794d(b).

Although the law technically applies to federal agencies' existing EIT, by its own terms it is unenforceable except for products procured on or after August 7, 2000; retroactive modification of existing EIT is not required. Agencies continue to have long-standing obligations under sections 501 and 504 of the Rehabilitation Act to provide reasonable accommodations to qualified individuals with disabilities (including members of the public and federal employees) upon request and to avoid disability-based discrimination, generally. 29 U.S.C. §§ 791, 794. Agencies must comply with section 508 regardless of whether they have employees with disabilities or serve members of the public with disabilities.

Built-in assistive technology is not required where it is not needed. Section 508 does not require every workstation or every EIT product to be fully accessible to persons with disabilities. Products

like desktop computers do not have to be outfitted with refreshable Braille displays;² rather they must be compatible with refreshable Braille displays, so that if an individual who is blind needs one as a reasonable accommodation, he or she can use it with the agency's standard workstations. Section 508 does not require private companies who market EIT products to the Federal Government to modify the EIT products used by company employees, or to make the companies' own Internet sites accessible to people with disabilities. For instance, if a manufacturer wishes to sell desktop computers to federal agencies, it must ensure that these computers comply with the Access Board's Section 508 Standards or agencies will be unable to purchase them. The company telecommunications systems, Internet pages, and other EIT used by company employees (including desktop computers not intended for federal use), are not subject to section 508.

The Department of Justice is not charged with enforcing section 508. Members of the public and employees with disabilities, however, may:

- file administrative complaints with agencies they believe to be in violation of section 508; or

- file private lawsuits in Federal district court.

29 U.S.C. § 794d(f).

In August 2001 and every 2 years thereafter, the Attorney General is required to provide updated reports to the President and Congress. These subsequent reports will discuss improvements in the degree of accessibility of federal EIT and will also report on the resolution of section 508 complaints filed against federal agencies. 29 U.S.C. § 794d(d).

The Report

The Department of Justice's Civil Rights Division has prepared this Report. It contains the results of the first Executive Branch-wide section 508 evaluation. It also recommends specific inexpensive, cost-effective, and easily accomplishable measures to improve the extent to which federal agencies' technology is accessible to people with disabilities. By following these recommendations, agen-

cies will facilitate their compliance with the general nondiscrimination and reasonable accommodation requirements of sections 501 and 504 of the Rehabilitation Act. The Department's recommendations make the most of existing resources and build upon model agency practices.

The Report is intended to provide guidance to:

- federal information technology personnel, policy makers, and procurement officials,

- private sector technology designers, manufacturers, and vendors, and

- disability advocates.

History of the Department of Justice's Efforts

In April 1999, the Attorney General sent a package of detailed self-evaluation materials and resource guides to federal agencies and departments, including the U.S. Postal Service, to assist them with accomplishing meaningful section 508 self-evaluations. Agencies were instructed to evaluate their procurement policies and practices, telecommunications products and systems, and their most commonly used Internet pages, software applications, information kiosks and other information transaction machines, and other electronic office equipment such as fax machines, copiers, and printers. Products were generally evaluated in 2 ways:

- using objective checklist-style questions, and

- using more subjective evaluation techniques, such as consulting with people with disabilities and viewing Internet pages with text-only browsers and other types of assistive technology.

To create this Report, the Department collected objective survey data from 81 agencies, including over 250 components, on an interactive Internet database site. A list of these agencies is attached as General Appendix A (Categories of Agencies). Subjective "overall agency evaluations" were also provided to the Department.

The Department established a section 508 home page (<http://www.usdoj.gov/crt/508>) to make available to a wide audience the Department's section 508 resource guides and self-evaluation material. Federal and state agencies, the technology industry, and disability advocates regularly use this web site. From the week ending April 12, 1999, through the week ending March 13, 2000, we recorded 201,432 "hits" on this site.

For the last 18 months, representatives of the Department of Justice have met with countless agencies to help them understand the importance of section 508 and to assist them with their self-evaluations.

This Report would not have been possible without assistance from the Department of Education, the General Services Administration, the Federal Communications Commission, and other agencies. The Department also learned from private sector leaders in the field of technology accessibility, including the World Wide Web Consortium's Web Accessibility Initiative and the University of Wisconsin's Trace Center.

General Findings and Recommendations

While several agencies are models of accessibility, the data suggest the need for improvement in the accessibility of federal EIT to persons with disabilities. Most agencies can also improve the extent to which disability accessibility issues are incorporated into their mainstream technology procurement contracts.

The most significant challenge posed by section 508 is the need for coordination between those with technological expertise and those with knowledge of disability access issues. The rapid pace of technology innovation can further complicate the issue. Increased inter- and intra-agency coordination among relevant personnel — including information technology personnel, procurement officials, telecommunications staff, equal employment opportunity professionals, and end users with disabilities — along with the private sector, would benefit everyone.

For increased coordination and cooperation to be efficient and effective, the Department recommends the following:

Increased Coordination

1. The President should issue a *Technology Accessibility Coordination Directive* to:

a. Revitalize the Interagency Disability Coordinating Council (IDCC), as set forth in 29 U.S.C. § 794c, with the Attorney General as Chair, consistent with Executive Order 12250, 29 U.S.C. § 2000d-1;³

b. Direct certain Federal agencies (including the General Services Administration, the Department of Defense, and the Department of Transportation), and invite other agencies (including the Federal Communications Commission and the U.S. Postal Service) to participate as nonstatutory members in the IDCC; and

c. Direct the Department of Justice, in consultation with the Office of Personnel Management, the EEOC, and the Access Board, to issue guidance to agencies clarifying the relationship among sections 501, 504, and 508 of the Rehabilitation Act.

2. The Universal Access Working Group

(UAWG).⁴ Each cabinet level, large, and mid-sized agency, along with representatives from small and very small agencies, should join the inter-agency UAWG. See General Appendix A (Categories of Agencies). The UAWG has been an instrumental force in advocating for accessible technology throughout the Federal Government and private sector. Its relevance would be increased if its members were designated as their agencies' representatives, rather than participating as individual volunteers, and if more agencies were involved.

3. 508 Coordinators. Each agency should designate Coordinators for purposes of complying with the substantive and reporting requirements of section 508. Agencies should either select multiple Coordinators -- to represent each of the agency's information technology, telecommunications, disability accommodations, and other relevant sectors -- or a single representative to act as an intermediary among these sectors. The Section 508 Coordinators of cabinet level, large, and mid-sized agencies, along with representatives from small and very small agencies, should attend UAWG

meetings as representatives of their agencies. See General Appendix A (Categories of Agencies). A list of all Section 508 Coordinators should be developed and distributed among all agencies. The Section 508 Coordinators should meet regularly with agencies' Section 504 Coordinators.

Technical Assistance

1. The General Services Administration (GSA) and the Access Board, which have statutory authority for providing technical assistance under section 508, should share in the following responsibilities:

a. Information Hotline. An information hotline should be established for federal agencies, persons with disabilities, and the IT industry. The Department of Justice's Americans with Disabilities Act Information Line should serve as a model.

b. Technical Support Center. An inter-agency technical assistance support center should be established where agencies can receive specific, hands-on assistance tailored to their individual concerns. The Job Accommodation Network of the President's Committee on Employment of Persons with Disabilities at the Department of Labor should serve as a model.

c. Internet Resources. An Internet message board and listserv (an e-mail mailing list for discussion among a group of users) should be maintained where knowledgeable agencies can post solutions to particular problems and where agencies trying to address EIT accessibility issues can post questions. Agencies that have developed evaluation criteria, techniques, and reports of existing EIT products should make these available to other agencies using these Internet resources [recommendation of the Social Security Administration].

2. GSA should do the following:

a. Accessible Products Clearinghouse. GSA should be directed to act as a clearinghouse for information regarding accessible EIT products. Any manufacturer's information regarding accessibility of EIT products should be made available to all federal contract officers and their technical representatives through this Clearinghouse. The

Energy Star and Y2K programs may provide models on which to build.

b. Training Clearinghouse. A clearinghouse for accessible training resources — and training regarding accessibility — for management, IT and procurement personnel, and end users with disabilities should be established. Vendor information regarding accessible training opportunities should be made available to all agencies through this Clearinghouse.

3. Mechanism for Reliable Information. The Federal Government, in partnership with the private sector, should explore the best mechanism to provide reliable information (including information regarding the comparative usability of EIT products for people with different types of disabilities) to manufacturers, vendors, and procurement officials.

Other General Implementation Recommendations

1. Alternative Dispute Resolution. Each agency should establish voluntary alternative dispute resolution mechanisms and make them available to members of the public and employees with disabilities as a means to resolve allegations that an agency is violating section 508.

2. Other Government Certification Programs. Government programs which test and certify software for federal use (such as the JFMIP certification of financial management applications) should incorporate Section 508's accessibility requirements into their certification processes [recommendation of the Equal Employment Opportunity Commission].

3. Voluntary Advisory Committees of Persons with Disabilities. Each cabinet level, large, and mid-sized agency that has not already done so should form an intra-agency voluntary advisory committee of persons with disabilities. See General Appendix A (Categories of Agencies). Small and very small agencies are encouraged to form joint inter-agency committees. These committees can assist agencies in recognizing accessibility issues, finding cost-effective solutions, and accomplishing testing. Participation by people with disabilities in all such committees should be fully voluntary. The Equal Employment

Opportunity Commission and the Office of Personnel Management should collaboratively publish guidance to assist agencies with setting up these committees.

4. Community Partnerships. Each agency is encouraged to form partnerships with disability rights groups. These partnerships can assist agencies with recognizing accessibility issues, finding solutions, and accomplishing testing.

Procurement Findings and Recommendations

Section 508's enforcement provisions apply only to EIT products "procured" on or after August 7, 2000. The Access Board's Standards to implement section 508 will be incorporated into the Federal Acquisition Regulation (FAR). Most agencies are subject to the FAR. Some others follow it voluntarily. The few remaining agencies, including the U.S. Postal Service, will be required to modify their procurement regulations to incorporate the 508 Standards.

Relatively few agencies currently incorporate accessibility provisions into their EIT procurement contracts (several of the better contract provisions have been incorporated into this Report to serve as models for other agencies; see, e.g., The Department of Education's contract language, attached as Procurement Appendix B). Even fewer agencies test EIT products for accessibility prior to bid acceptance. A great majority of agencies continue to address EIT accessibility issues on an ad hoc basis.

The Department recommends agencies take the following steps to improve their procurement policies and practices:

1. Specific Language for RFPs and Contracts

Each agency should incorporate appropriate procurement language that specifically addresses accessibility for persons with disabilities in all EIT RFP's (requests for proposals) and contracts to be in compliance with the Federal Acquisition Regulation or other applicable federal procurement regulation.

2. Agencies Not Subject to the Federal Acquisition Regulation (FAR). Although most agencies are covered by the FAR, any that is not should consult

with the Access Board without delay to ensure that its procurement regulations are appropriately modified to incorporate the Section 508 Standards when they are final.

3. Discontinue Ad Hoc Approach. Each agency that has not already done so should develop systematic ways to ensure that it is procuring accessible EIT products, rather than relying on an ad hoc approach. This method will increase the interoperability of different types of technology and is especially necessary as technology increases in complexity. Each agency should review all of its procurement practices and policies, formal and informal, to determine whether accessibility issues are appropriately addressed.

Technology-Specific Findings and Recommendations

Federal Agencies' Web Pages

Federal agencies' Internet and intranet sites contain some barriers to access for people with disabilities. The most commonly encountered barrier is the failure to provide appropriate and meaningful text information for visual images ("alt text" for simple images and icons and long descriptions for more complicated graphics). This barrier, like others that are encountered less frequently, can be eliminated quite easily with minimal design changes.

Part of the reason that agency Web pages are relatively easy for people with disabilities to use is that most agencies have consciously decided to make their pages readily usable by people who use older, less expensive, and less sophisticated technology. Federal Internet pages tend to be free from the "bells and whistles" that require more particular attention to accessibility issues, such as multimedia content or interactive features.

As agencies put more of their programs and services online, they must remain vigilant to ensure they are not inadvertently creating barriers for people with disabilities. Online forms and documents rendered exclusively in Adobe's portable document format (pdf) or Microsoft's PowerPoint format may raise particular concerns.

As most barriers on agency Web sites result from an inattention to detail rather than an underlying

difficulty with the design or technology, agencies should invite people with disabilities to inform them when they encounter barriers.

To address these issues and others detailed in the Report, the Department recommends the following:

1. Testing Web Pages Before Posting. Each agency should evaluate for accessibility all of its new Web pages before they are posted. Existing Web pages should be tested as they are updated. Testing should be done with text-only browsers and, where possible, with assistive technology such as screen reading software to ensure that the experience of users with disabilities is comparable to that of others.

2. Agency Web Guidelines. Each agency that has developed style guidelines to maintain a consistent "look and feel" of its Web pages should review those guidelines to ensure that they will maximize the accessibility of the agency's Web pages.

3. The Government Printing Office (GPO). Many smaller agencies rely on the GPO for their Web site design and maintenance. While section 508 does not apply to the GPO, the GPO should provide leadership to ensure that all Web pages it develops or maintains are accessible.

4. Dedicated E-mail Addresses. Because most accessibility problems on agency Web sites result from oversight or lack of awareness of accessibility issues, rather than technical or design difficulty, each agency should prominently post to its Internet pages an e-mail address through which users with disabilities can inform the agency of any accessibility barriers encountered. Each agency should be responsive to any e-mails it receives regarding the accessibility of its Web site to people with disabilities.

5. Accessibility Information Logo. The National Endowment for the Arts, along with the Universal Access Working Group, GSA, and the Access Board, should develop an easy-to-recognize accessibility information logo (and alternative text label). Each agency should use this logo (and text label) to link people with disabilities who use its Web pages with appropriate accessibility instructions and information, including an e-mail address to the agency's accessibility point-of-contact.

6. Location of Accessibility Information. Where it makes sense to do so, such as when placing a link to a text-only alternate Web site or when posting the accessibility instruction logo and label, each agency should place accessibility information in the uppermost left-hand corner of its Web pages. This location will facilitate use of the agency's Web pages by people who use screen readers, as it is the first location from which a screen reader will read.

7. Document Formats. As agencies put more of their programs and services online, each must remain vigilant to ensure it is not inadvertently creating barriers for people with disabilities. Online forms created using any of the various Web technologies pose significant accessibility challenges to Web designers. Documents rendered exclusively in Adobe's portable document format (pdf) or Microsoft's PowerPoint formats may raise particular concerns. If any posted documents or forms are less than fully accessible, each agency should also post ASCII or accessible HTML versions of the same documents, where possible. Where exclusive reliance on an inaccessible format is unavoidable, each agency should provide contact information where users with disabilities can request the underlying information in an accessible format, where doing so would not impose an undue burden on the agency or result in an fundamental alteration.

Software

Almost all software applications contained some barriers to some people with disabilities. Most applications, however, provided a fair degree of accessibility to most people with disabilities. Among the communities most likely to face significant barriers are those who are blind, those with low vision, and those with multiple disabilities.

A sizable majority of the software applications used most frequently by agencies are commercial off-the-shelf (COTS) applications used without agency modification. The most commonly encountered barriers in COTS software fall into the categories of (1) documentation and support,⁵ and (2) programming.⁶

The Department recommends the following:

1. Training Needs Surveys. Each agency should develop and distribute "training needs" surveys to all employees. These surveys should explicitly address training needs for people with disabilities, especially those who use assistive technology in conjunction with mainstream software applications. EEOC should provide guidance to agencies on this issue.

2. Appropriate Periodic Training. Each agency should train all IT personnel, procurement officials, "help desks" and other support personnel, and users with disabilities, regarding basic accessibility issues. To conserve resources, GSA and the Access Board, in consultation with other key agencies and inter-agency groups, should create training modules that can be shared among agencies. GSA and the Access Board should also make available lists of appropriate training vendors. Each agency should ensure that specialized training is available for users with disabilities for all software packages for which training is generally provided, including training provided by third-parties on behalf of agencies.

3. Software Compatibility Testing Centers. As agencies update and centralize their IT architecture, they should create software compatibility testing centers at which software can be evaluated for compatibility with existing agency platforms and with commonly used assistive technologies. Larger agencies may wish to establish their own compatibility testing centers. An interagency software compatibility testing center should be established to assist smaller agencies, larger agencies without testing centers, and private software manufacturers and developers. Centers at Department of Defense, Department of Education, the Social Security Administration, Department of Veterans' Affairs, and GSA can serve as models.

4. Documentation (Instructions, Help Files, User Manuals, Etc.). Many software applications have accessibility features of which most users, trainers, 'help desk' personnel, and others are unaware. Other software applications (such as word processors, Adobe Acrobat, etc.) can be used to create information products. Knowledgeable users can use these applications to create information products that are relatively accessible. Other people may inadvertently use the same applications in such a way that the information products they create are largely inaccessible. Each agency should require its software vendors to include clear docu-

mentation of the accessibility features and appropriate uses of their products to maximize accessibility.

5. "COTS Software Accessibility Manuals".

Because many of the Federal Government's current software applications may continue to be used for a long time, federal agencies must make the most of the accessibility features built into currently-used software, rather than rely exclusively on procurement of new accessible software. GSA and the Access Board, in consultation with other key agencies and inter-agency groups, should consult with software manufacturers and should develop and distribute supplemental manuals for users of commercial off-the-shelf (COTS) software applications. These manuals should include clear instructions for maximizing the accessibility of COTS applications currently used by federal agencies and for promoting accessibility and minimizing barriers in the information products some COTS applications (such as Adobe Acrobat) are used to produce. Specific information, such as macros developed to provide shortcut keys where none previously existed, should be incorporated into these manuals.

6. Government-Wide, Low-Cost Programming Solutions. GSA and the Access Board, in consultation with other key agencies and inter-agency groups, should contact manufacturers of COTS software to determine whether software updates, containing programming "fixes" of barriers identified in this Report, may be obtained freely or purchased for a low fee and distributed throughout all federal agencies. Each agency that has already developed programming solutions to remove barriers to COTS applications should be encouraged to continue this work and to share their results with all appropriate agencies.

Telecommunications

Telecommunications poses specific accessibility issues for almost every community of persons with disabilities, including people who are deaf or hard of hearing and those with speech impairments, people who have difficulty pressing touch-tone buttons, persons with visual impairments who cannot see visually displayed information such as message waiting or caller ID indicators, and persons with cognitive impairments or learning disabilities who have difficulty understanding or

remembering serial connection choices (press 1 for ____; press 2 for ____; etc.).

Few agencies are fully utilizing the efficient, low-cost services that are available to them, such as the Federal Information Relay Service (FIRS)(which allows deaf and hard of hearing people to communicate via telephone with people who do not have special equipment, such as TTYs).⁷ The lack of awareness of such resources has a negative impact on federal employees and job applicants with disabilities, as well as members of the public with disabilities. Training is often all that is required to improve this situation.

Few agencies provide equivalent direct-access TTY connections for serial connection services, automated call sequencing connection services, or other interactive telephone services. As these services can be difficult or impossible to navigate using the Telephone Relay Service, few agencies have automated telephone systems that can be used at all by people who are deaf or hard of hearing. For minimal cost, additional lines with text messaging modes can be installed. These serial connection services and automated interactive telephone services can be made generally accessible to a wide variety of people with disabilities — including people with cognitive impairments and learning disabilities, mobility impairments affecting dexterity or speed, and others — simply by providing an operator.

Most agencies that provide employees with pagers have text pagers with vibration signals; these pagers are accessible to people who are deaf or hard of hearing.

Few agencies have begun using the wide variety of disability-friendly telecommunications products that are now offered by mainstream telecommunications companies.

In light of these findings and others discussed in the Report, the Department recommends the following:

1. Training. Each agency should train all federal employees who communicate by telephone with the public or with other employees on how to use TTY's, the Telephone Relay Service (TRS), and the Federal Information Relay Service (FIRS). GSA and the Access Board, in consultation with

the FCC, should develop a short, electronic training module that can be made available through agency intranet sites at minimal expense.

2. TTY's in Public Areas. Each agency should provide TTY's, outlets, and shelves wherever the agency provides telephones for members of the public.

3. TTY's in Call Centers. Each agency should install TTY lines wherever it receives a large volume of incoming calls.

4. FIRS. GSA, in consultation with the FCC and other key agencies and inter-agency groups, should explore upgrading the Federal Information Relay Service (FIRS) to include video relay interpreting and speech-to-speech relay services.

5. Operators. Each cabinet level, large, and mid-sized agency should make operators available on its interactive automated telephone services and should allow callers to connect with operators by pressing "0" or by staying on the line. See General Appendix A (Categories of Agencies). Small and very small agencies should explore cost-sharing measures to provide operators for their interactive telephone services.

6. Equivalent Interactive TTY Telephone Services. Each agency should configure its interactive telephone systems to be compatible with TTY's — or should provide equivalent TTY interactive systems containing the same functions and information (and updated as often). This goal can be easily accomplished by adding a second telephone line with a TTY message and TTY compatible features that are equivalent to those provided on the interactive voice systems.

7. Equivalent TTY Toll-Free Information Services. Each agency that provides toll-free information lines should ensure that those lines support TTY use or the agency should maintain equivalent separate toll-free TTY information systems that are staffed to be as responsive as the standard toll-free information lines.

8. Computer-Based TTY Equivalency Systems. GSA and the Access Board, in consultation with the FCC and other key agencies and inter-agency groups, should explore purchasing a government-wide license (or multiple licenses to offer to agencies) of ASCII/computer-based TTY systems to

ensure that all agencies' employees with networked computers have TTY equivalency on their network with minimal per-employee costs. Appropriate attention should be paid to factors such as computer network security.

9. Voice Recognition Technology. GSA and the Access Board, in consultation with the FCC and other key agencies and inter-agency groups, should explore buying multiple licenses for voice recognition technology to install on all agencies' interactive telephone systems.

10. Telecommunications Technology Assistance Center. The FCC, in consultation with GSA, the Access Board, and other key agencies and inter-agency groups, should establish a telecommunications technical assistance center. This Technical Assistance Center should assist agencies in working with manufacturers – for example, to reconfigure telephone systems to send a “wait” signal to TTY users – and to take full advantage of advances in technology that are coming from section 255 of the Telecom Act and section 508 of the Rehabilitation Act.

Kiosks and Other Information Transaction Machines

Few agencies currently use information kiosks, point-of-sale card reading machines, electronic building directories, or other types of ‘information transaction machines’ or ITMs. Where they are used, some ITMs can be made more accessible to people with mobility impairments, such as those who use wheelchairs, simply by moving them to more accessible locations. Other barriers, such as an ITM's failure to provide an audio mode that can be used by people who are blind or who have low vision, can be more properly addressed by manufacturers.

Because section 508 does not require agencies to retroactively remove barriers (although agencies continue to have nondiscrimination and reasonable accommodation obligations under sections 501 and 504 of the Rehabilitation Act), agencies with inaccessible ITMs should ensure that the programs or services for which nondisabled people use ITMs are accessible to people with disabilities through alternate means.

In light of these findings and others identified in the Report, the Department recommends the following:

1. Non-Agency-Owned ITMs. Each agency that has facilities or property containing ITMs that are owned or controlled by other entities (including private entities, other federal agencies, or others) should notify them of any barriers to access in their ITMs and recommend that such entities address accessibility issues on a specific time schedule.

2. Location of ITMs. Each agency that has ITMs should ensure that its ITMs are located on accessible routes and are otherwise accessible to people with disabilities such as those who use wheelchairs.

3. Inaccessible ITMs. If an agency's existing ITM is inaccessible or contains inaccessible features, the agency should ensure that whatever information or services the agency provides on the ITM are also available through an accessible and comparably convenient and useful alternate means of access (e.g., automated telephone service or through the Internet). The agency should provide appropriate signage with full instructions regarding use of the accessible alternative method of obtaining information or services.

4. Upgrading Existing ITMs. While section 508 does not generally require retrofitting existing EIT, each agency that replaces or updates an ITM's software or hardware should look for and take advantage of easy opportunities to improve the ITM's accessibility.

5. Instructions. Many times, an ITM contains accessible features, such as a volume control mechanism, but instructions on how to use these features are missing or inadequate. Each agency that has an ITM should survey the ITM and, if appropriate, contact the ITM vendor for a full list of accessible features. The agency should provide clear instructions in accessible formats.

Fax Machines, Copiers, Printers, and Other IT Office Equipment

Most fax machines, copiers, printers, and other IT office equipment contain barriers to access by people with disabilities. For instance, most copiers

give error messages on liquid crystal display (LCD) screens that are generally inaccessible to people who are blind or who have low vision. Many LCD screens are angled so that they are difficult or impossible for people who use wheelchairs to read them.

Agencies generally found that when they used IT office equipment that was attached to their computer network, many of these barriers were eliminated. Most networked office equipment is designed to communicate with the user while he or she is at his or her workstation. Desktop computers can be easily equipped with assistive technology, such as screen readers, for people with disabilities.

For these reasons, and others set forth in the Report, the Department recommends the following:

1. Instructions. Many times, office machines contain accessible features, such as a volume control mechanism on a fax machine, but instructions on how to use these features are missing or inadequate. Each agency should survey its fax machines, copiers, and printers and, if appropriate, contact vendors for a full list of accessible features. The agency should provide clear instructions in accessible formats.

2. Networked IT Office Equipment. The extent to which copiers and fax machines are accessible is greatly enhanced when the user can send commands from an attached desktop computer terminal (such terminals may be easily outfitted with the appropriate assistive technology to meet an individual's needs). Each agency should, in appropriate circumstances, seek out network solutions over stand-alone machines when such solutions would provide a greater degree of accessibility for employees and members of the public with disabilities.

3. Instructions for Alternatives. For inaccessible IT office equipment that is available to the general public or a large number of employees, each agency should ensure that accessible instructions are available on how a person with a disability can obtain accessible alternative services (such as where to seek assistance).

¹This document is available on the Department of Justice's section 508 Web site (www.usdoj.gov/crt/508). People with disabilities may request copies in Braille, large print, or on computer disk by calling 1-800-514-0301 (voice) or 1-800-514-0383 (TTY).

²Some people who are blind and people who are deaf-blind use computer devices called "refreshable Braille displays," which move pins up and down to form Braille letters. The user "reads" the Braille letters across a line, then advances the Braille display to the next line when ready.

³Revitalization of the IDCC will enable it to function as a central coordination point to eliminate duplication of efforts and/or inconsistencies among agencies and inter-agency groups.

⁴The Universal Access Working Group is part of the Federal Information Services Applications Council of the National Science and Technology Council's Committee on Computing, Information, and Communications. It is coordinated through the Center for IT Accommodation in the Office of Governmentwide Policy at the General Services Administration.

⁵Frequently encountered documentation and support barriers include:

- A lack of clear instructions for keyboard functions (26%)
- Instructions for keyboard use not widely available (30%)
- Manuals and documentation are not provided in an electronic format with text descriptions of charts, graphs, etc. (37%)
- Specialized training is not provided for users with disabilities (53%)

⁶Frequently encountered programming barriers include:

- Lack of shortcut keys (37%)
- Poorly located field labels and descriptions (24%)
- Application won't allow users to override default fonts for printing and text displays (28%)
- Application does not support "print to ASCII" (26%)

⁷TTYs are text telephones. They are also called 'TDDs' or 'telecommunications devices for deaf persons.'